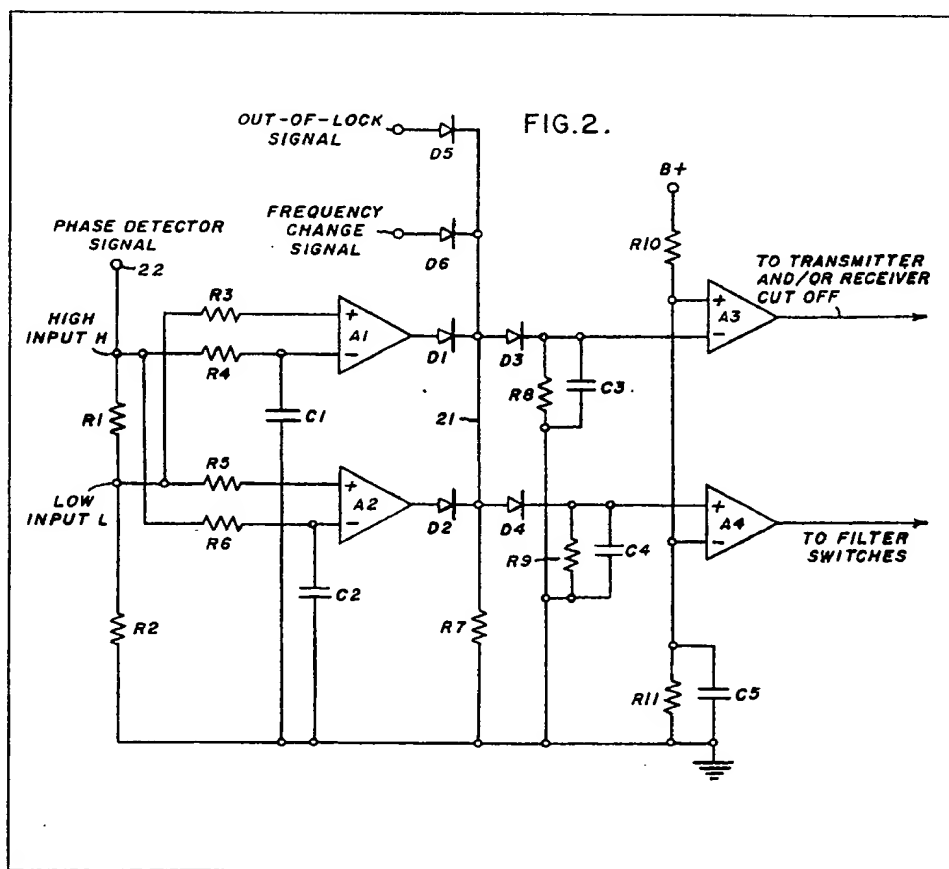


- (21) Application No 8311873
(22) Date of filing 29 Apr 1983
(30) Priority data
(31) 392566
(32) 28 Jun 1982
(33) United States of America (US)
(43) Application published 25 Jan 1984
(51) INT CL³
H03L 7/10
(52) Domestic classification
H3A L2D2 L2M L3V P XC
U1S 2204 2205 H3A
(56) Documents cited
GB A 2065396
GB 1533544
GB 1501403
GB 1283551
GB 1145706
GB 0853960
(58) Field of search
H3A
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(54) Control circuits for phase locked loops

(57) Control signals (A4) for switching the bandwidth of a filter in a phase locked loop are provided by comparator circuits (A1,A2) having time delays (C1,C2) at their inputs that vary as a function of the magnitude of changes in the output from a phase detector. These variable time delays permit the comparator circuits to produce an output having a duration of the proper length in order to permit the filter to have a large bandwidth for a long enough time to permit the phase locked loop to become locked. When the time delay expires the loop filter returns to its previous narrow bandwidth. The wide filter bandwidth allows rapid locking of the loop to a new frequency. An associated transmitter may be cut off (A3) during the period of wide bandwidth.



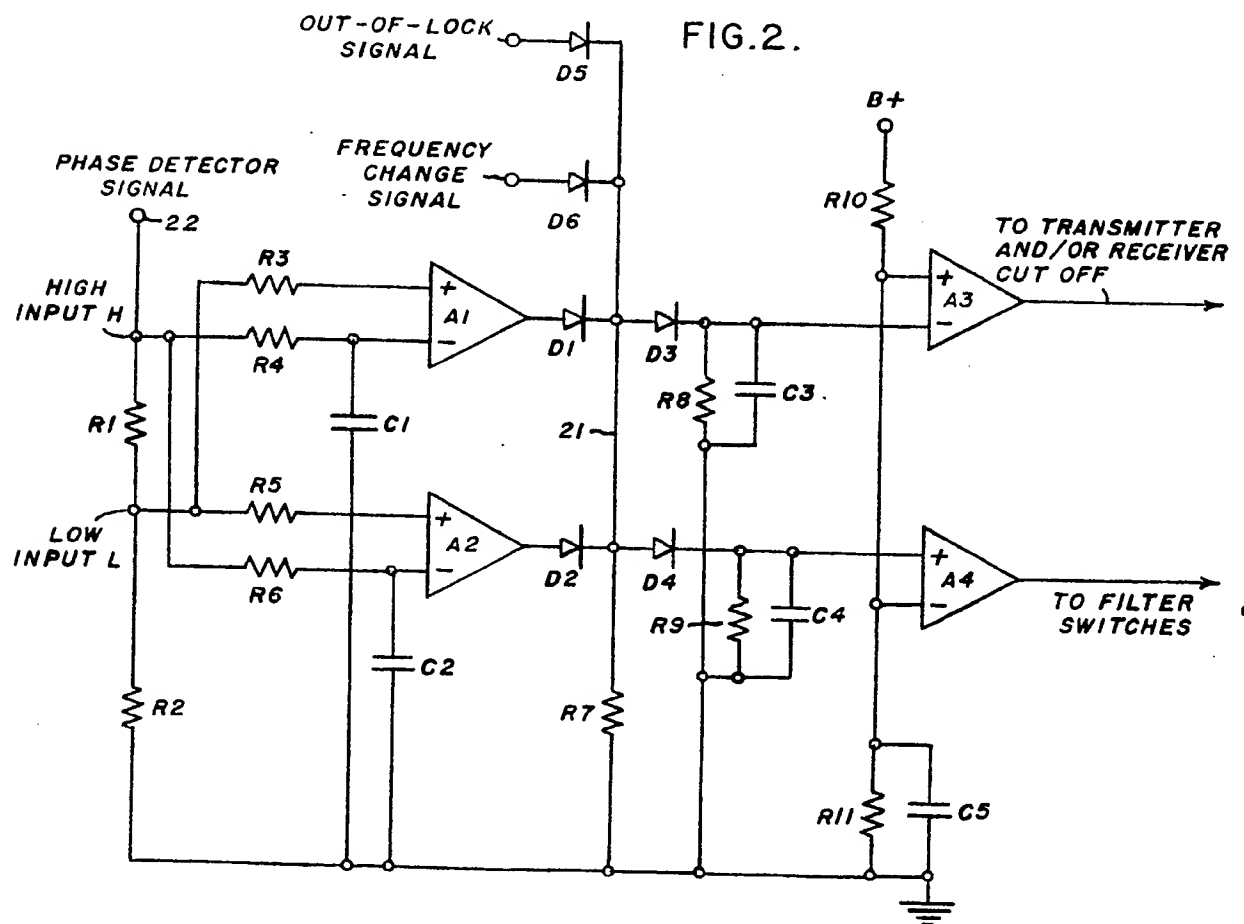
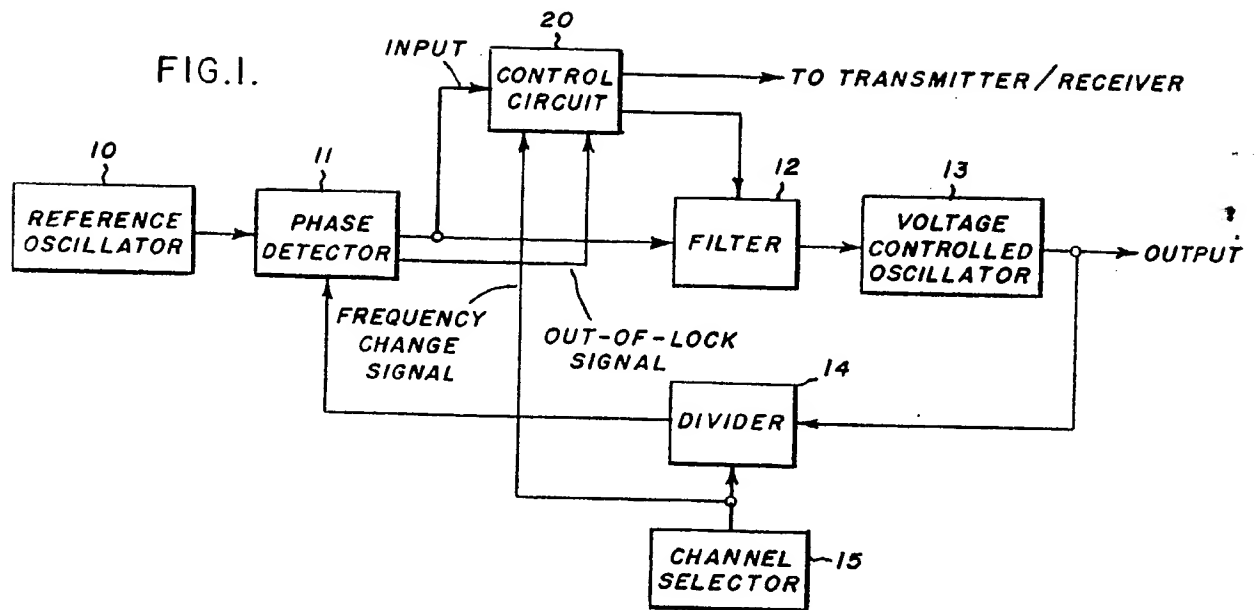
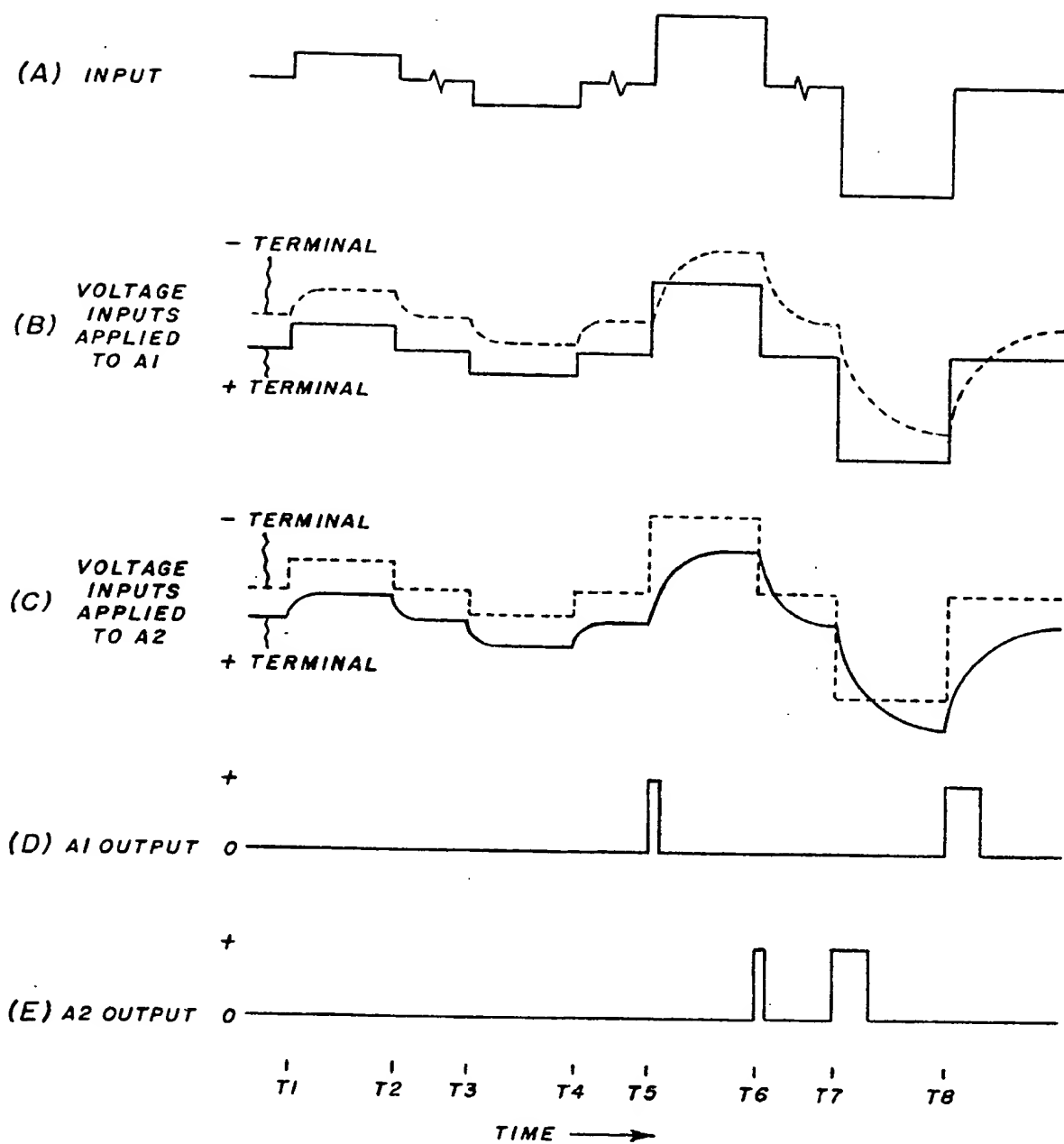


FIG.3.



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